THE FOOD AND HABITS OF THE HOUSE-SPIDER (*HETEROPODA VENATORIA*, LINN.)

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(*With two plates*).

All spiders are carnivorous and generally live on the more helpless invertebrates. But instances of their preying upon vertebrates also are not wanting. Accounts of the capture of fish, rats, snakes, frogs, lizards, etc., by some species of spiders have been recorded (**1-9**), but an instance of a spider preying upon a bat is unknown to me. Some months ago, I came across such an instance.

One evening, early in May, 1940, while observing the preying habits of a species of gregarious spider, *M. faltana*, (**10**) in the village of Kristapur, near the salt lakes of Calcutta, my attention was drawn by a cow-boy who cried out that a big spider was struggling with a peculiar creature in an adjacent cow-shed. Entering the shed I came upon an astonishing sight—a tiny bat (*Pipistrellus* sp.), caught as in a trap between two bamboo-strips of a matted wall, was struggling hard to free itself from the grip of the powerful mandibles of a big house-spider, *Heteropoda venatoria* (**11**), clinging to its neck with all its might (Plate II, Fig. 1). The bat screamed at intervals and gasped. As it was getting dark inside the shed a torch was focussed on the spot. The bat squeaked as the light fell upon it, and suddenly came out of the trap vigorously flapping one of its wings. The spider tried its utmost to maintain its original hold. The bat dragged itself out with the spider on its back and crawled a short distance to a smoother part of the wall with the peculiar gait of its own. It was tired and could not move far. It gasped hard and its voice was weak. It remained stationary for about 15 to 20 minutes, when all at once it began to flap its right wing and finally stretched it out to the fullest extent. After a minute or two the stretched wing began to fold itself back like an organ in atonic condition. In order to capture them *in situ* I very cautiously covered them with a crystallizing dish. A piece of plain glass was then slowly pushed under the dish so that both of them, the aggressor and the victim, were transferred on to the flat glass. Notwithstanding the slight disturbance caused by this process the spider did not release its grip but clung to its prey more firmly than ever. While carrying the captives to my laboratory the spider released its victim and took its stand on the vertical wall of the glass dish. For the night they were kept in a suitable place. Next

morning the spider was found with its legs outspread resting upside down at the top of the inverted dish. Its victim with its wings folded lay slightly inclined on its right side. It was taken out and found to be stone dead, *rigor mortis* having started long before. Evidently it remained untouched by the spider during the whole of the night because no wounds or scratches, other than the first, were traceable.

This strange incident led me to investigate the habits of these spiders, some of which are highly interesting and peculiar.

Barring a few species, spiders are not social creatures. Besides most of them are cannibalistic. Fights often occur when two happen to meet. *H. venatoria* displays this habit. If by chance one happens to come within close range of another of its species, both at first, try to avoid an encounter by running away, or by taking cover, but failing this they fight.

I had an opportunity of witnessing such a fight. The encounter took place on the wall of a room. Two big spiders, faced each other at a distance of not more than ten to twelve inches (Plate I, fig. 1). Both were females each carrying its egg-case under its breast. All quiet on the sooty wall,—a lull before the storm ! Suddenly one of the antagonists, raising the front pair of legs high up in the air, rushed at its opponent, which, at first, showed signs of retreating, then stood its ground, meeting the onslaught with its two front legs raised. They stood at the 'on guard' for a while, then the aggressor fell upon its enemy with surprising agility (Plate I, fig. 2). They wrestled for two or three seconds only and then separated; the breathing space was short—an interval of two or three minutes—and the spiders joined combat for the second time. Throughout the grim struggle they kept a firm hold on their great egg-cases with the help of the pedipalpi. In the fury of the fight they suddenly lost their balance and fell into an enamelled tub at the foot of the wall. The fall in no way perturbed the fighters and the struggle continued with the same intensity. One of the combatants lost a leg, but did not evince the slightest sign of submission. Now they disengaged themselves a second time, there was an interval of a few minutes and the third round commenced. The spider with the lost limb showed signs of weakening and presently lay still. The victor turned it over till it lay flat on its back, then bit into its body maintaining its hold for a long time. The legs of the prostrate spider moved spasmodically, expanding and retracting. The egg-case was still held to its breast. This, the victor now removed, and holding it with one of its legs made off with its booty (Plate I, fig. 3). But the steep walls of the tub compelled it to remain a captive. I permitted it to enjoy its victory for a while.

At nightfall these spiders come out of hiding in search of prey and lie stationary in some suitable place with legs outspread. Innocent crickets (*Gryllus domesticus*), cockroaches are also night-roamers. At night they too come out of their crevices and move about in search of food and frequently fall victims to the spider lying still in ambush. Careless in their movements they come within easy reach of the spider which pounces upon the unwary

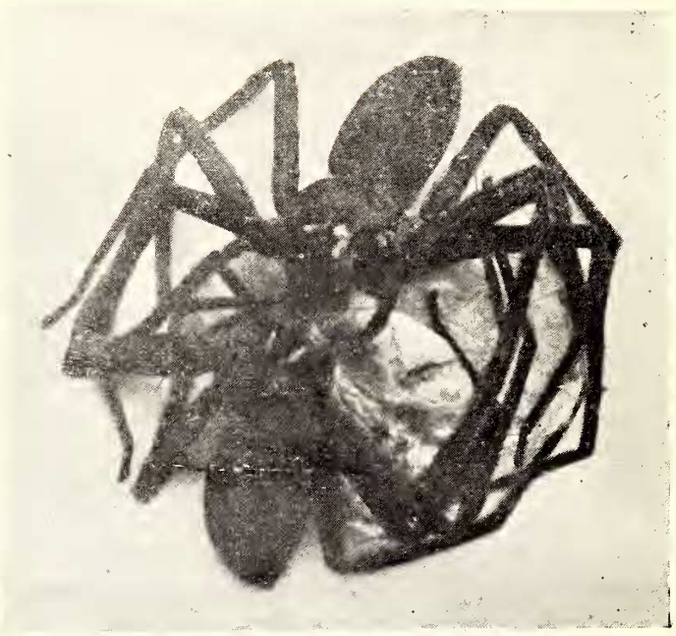

Fig. 2.—They come to grips.

Fig. 1.—The spiders faced each other, holding their egg-sacs securely.

Fig. 3.—The victor kills her opponent and carries off her egg-sac.

HOUSE SPIDERS (*Heteropoda venatoria*) IN COMBAT

VICTIMS OF THE HOUSE SPIDER (*heteropoda venatoria*).

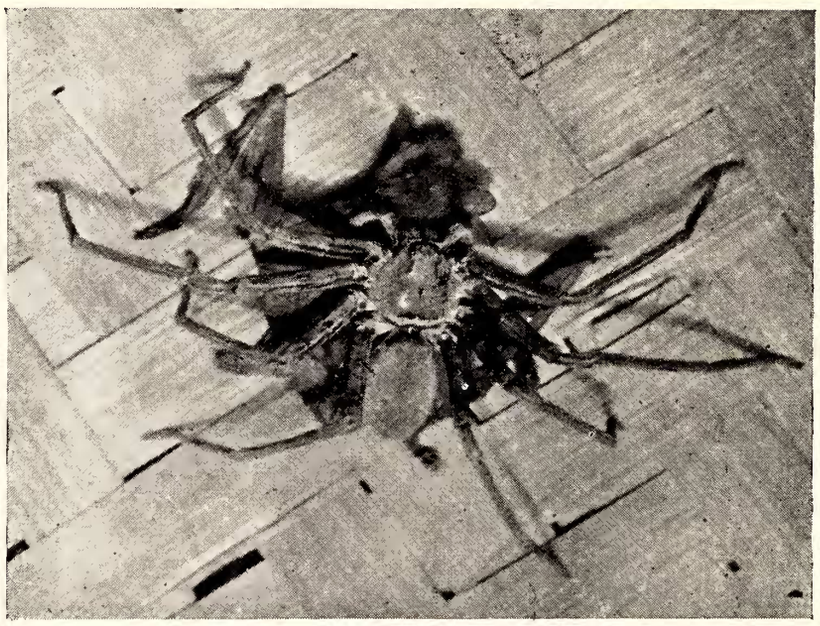

Fig. 1.—An unusual victim: House Spider gripping a pipistrelle bat in its mandibles.

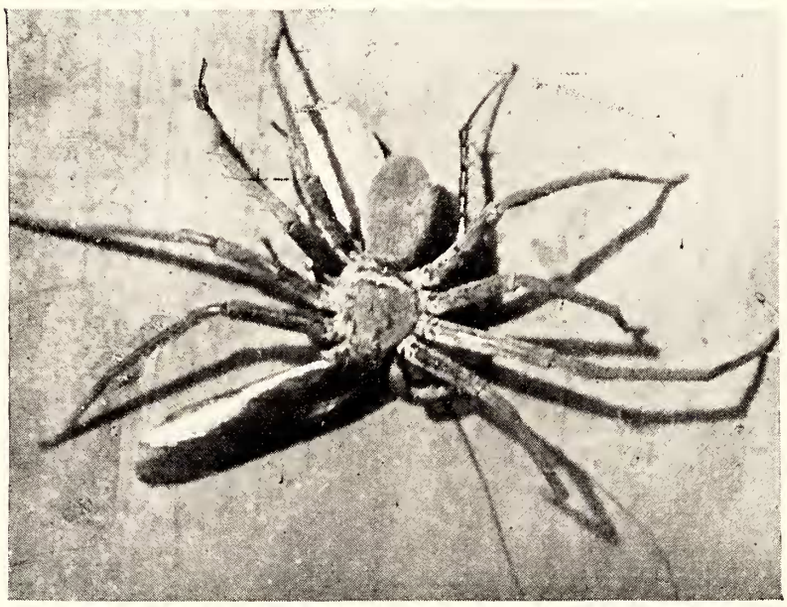

Fig. 2.—A useful service: These spiders help in ridding the house of cockroaches.

Fig. 3.—House Spider attacking a scorpion.

victim with lightning speed. Over-powered by its powerful bite and its poison a cricket dies almost instantaneously, but the cockroaches resist for some time. The spider carries the struggling cockroach from place to place until the poison takes effect and the insect's struggles cease, when it begins to chew the body to a ball-like mass sucking at the same time the juice out of it (Plate II, fig. 2). Their ways with house-flies are quite different and extremely interesting. This I had an occasion to observe while rearing and feeding them with flies. Flies were released into the rearing chamber one by one and the spider took them one by one in its jaws—a fly thus held cannot escape when the jaws open to receive the next victim. I have seen a spider take and keep in its jaws from ten to fifteen flies at a time. When it can hold no more, it starts to chew them *en masse*. In half an hour or so the juice is sucked to the last drop and the dried mass is ejected.

Once I came across a house-spider, *H. venatoria*, on the wall of a house with a young scorpion in its jaws. I tried in vain to capture the spider, but during the chase it dropped the scorpion. It was dead. The scorpion was identified as *Isometrus maculatus* (De Geer) and measured about one and three-fourths of an inch in length. Presumably it was preyed upon in the early hours of the morning. Scorpions are formidable, venomous creatures and it is astonishing that such a creature should be overpowered by a spider. In order to observe how this is accomplished I put a big spider, *H. venatoria*, in a spacious, flat, enamelled dish with high vertical walls. Here it was kept for some days after which a scorpion about two inches in length was let into the dish. The spider did not move at all. The scorpion remained stationary in the centre of the dish for a few minutes and then began to crawl about. Then it stopped and lay still at a point farthest from the spider. Nothing happened for two hours. Then the scorpion moved slowly along the angle of the dish till it came within reach of the spider; immediately the latter sprang upon the scorpion's back and firmly gripped the anterior portion of its body with its sharp fangs. The scorpion tried its utmost to sting its opponent reverting its tail over the spider's back, but it failed to drive its sting home perhaps because of the hard chitinous shell of the carapace. Unable to sting, the scorpion seized the legs of the spider in its pincers but could not keep its hold for a long time. It then tried hard to free itself from the grip of the spider by contortions of its body. The manœuvre did not succeed. The spider, seemingly yielding to the movements of the scorpion kept its grip on the victim as rigidly as ever. As the struggle continued the scorpion grew visibly weaker until it ceased to move at all and lay with its tail stretched flat on the surface of the dish. It was to all appearance dead. A few minutes elapsed. The spider now slowly moved its abdomen sideways and finally sat astride the scorpion's back. This seemed to bring the scorpion back to life. It suddenly swung its tail upwards and, bending it in an arch, tried over and over again, but without success, to sting the spider (Plate II, fig. 3). The spider avoided the thrusts shifting its abdomen with peculiar alertness. This was the scorpion's dying effort, in a while it collapsed and moved no more. The struggle had lasted for about an hour.